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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/022,385 | 12/20/2001 | Yuuki Morita | 392.1736 | 5333 |

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EXAMINER.

RO, BENTSU

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 05/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/022,385

Applicant(s)

MORITA ET AL.

Examiner

Bentsu Ro

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

FIRST OFFICE ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4, 7, 10 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by **Lowen et al US Patent No. 4,393,690.**

Claims 7 and 10 are respectively similar to that of claims 1 and 4, explanation will be given to claims 1 and 4 only. Explanation to claims 7 and 10 is omitted for time saving reason.

The following chart compares the subject matter of claims 1 and 4 with the corresponding teaching of Lowen et al, side-by-side.

claims 1 and 4:

Claim 1. A motor controller

for performing control of position or velocity of a movable member mechanically connected with a motor

using analog feedback signals from encoders for detecting rotational position or velocity of the motor,

Lowen et al teaching:

Figs. 2 and 3 show a motor controller;

Fig. 2 shows a speed control device 29 connected to a motor 11 to perform the speed control (or velocity control) of the motor 11;

column 2, line 26 clearly states "a variable speed drive motor";

the motor is connected to a machine, such as a metal stamping, a printing press, a feed mechanism, a sewing machine, or any reciprocating mechanism, see col. 2, lines 9-11 and Fig. 1;

Fig. 1 shows an encoder 25 connected to the motor 11 for feeding back a velocity signal; Figs. 2 and 3 each shows a transducer 30 which is also an encoder for providing phase signal and velocity signal of the motor;

wherein said motor controller includes means for displaying information on at least one of amplitude, offsets and a phase difference of the analog feedback signals on a display section of the motor controller or a host controller connected with the motor controller.

Claim 4. A motor controller according to claim 1, wherein the display section of the motor controller includes a display device connected with the motor controller.

col. 4, line 23 states that the calculator 28 may be "analog";
if the calculator 28 is an analog type, then the feedback signals will be analog;

Fig. 3 shows an oscilloscope 31 which is a "means for displaying information";
the oscilloscope 31 displays the amplitude of a velocity signal V in an analog form.

the oscilloscope 31 is a display device, the oscilloscope 31 is connected to the transducer 30.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 3, 5, 8, 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowen et al.

Regarding claims 2, 3, 8, 9, Lowen et al teach an oscilloscope 31, which is an analog display device. Lowen et al do not teach a digital display such as a LED display device or a seven-segment display device.

The LED display as well as the seven-segment display device is available everywhere and is also cheaper than an oscilloscope. If it is not necessary to see the complete speed spectrum, then a digital display is an alternative choice. If a digital display is chosen, it would have been obvious to use LED or a seven-segment type of display.

Regarding claims 5 and 11, Lowen et al teach the display of amplitude signal as explained previously in paragraph 2 above. Lowen et al do not teach an A/D converter for converting the analog feedback signal. However, if a user desires to display the feedback signal in a digital

form for the reasons explained in the preceding paragraph, then an A/D converter is required. Thus, using an A/D converter is considered an obvious design choice.

The reason for using LED or seven segment display is cost. It is noted that the cheapest oscilloscope is at least cost around \$500 while the LED and seven segment displays cost about several bucks.

5. Claims 1, 4, 6, 7, 10, 12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by **Ono et al US Patent No. 5,742,136**.

Again, claims 7, 10, 12 are respectively similar to that of claims 1, 4, 6, explanation will be given to claims 1, 4, 6 only.

The claims:

Claim 1. A motor controller for performing control of position or velocity of a movable member mechanically connected with a motor

using analog feedback signals from encoders

Ono et al teaching:

Fig. 1 shows a motor controller for performing both position and velocity control of a motor 100; the motor 100 can be used to drive a robot arm, see col. 7, lines 52 and 57;

Fig. 1 shows an encoder section 300; Fig. 4 shows the details of the encoder section 300, including encoder 300₁ and encoder interface 300₂; the encoder 300₁ has two outputs, one is at the operational amplifier 312 and the other is at the clock generator 311; the output from the operational amplifier 312 is an analog signal because operational amplifier 312 is an analog device; the signal from clock generator 311 could be either analog or digital; however, the actual position/velocity signal is from operational amplifier 312, therefore, the feedback signal is an analog signal; further, the LPF 321, the comparator 322 are all analog devices;

for detecting rotational position or velocity of the motor, or position or velocity of the movable member

wherein said motor controller includes means for displaying information on at least one of amplitudes, offsets and phase difference of the analog feedback signal on a display section of the motor controller or a host controller connected with the motor controller.

Fig. 6A shows a switch 401, this switch 401 can be flipped to either h1 for speed control, or to h2 for position control of the motor; Fig. 4 shows a velocity detection signal of the motor at the output of F/V converter 402 and a position detection signal of the motor at the output of position detecting means 504;

it is noted that both signals are analog signals because the F/V converter is an analog device;

Fig. 4 shows the output of the encoder interface 300₂ connected to a position detecting means 504, the output of the position detecting means 504 is a position detection signal;

Fig. 6D shows a similar encoder interface 300₂, the output of which is connected to Fig. 6A the position detecting means 504 (similar to that of Fig. 4) via a data bus BS; the position detecting means 504 is connected to a subtractor 503, and the output of which is connected to a position control means 505;

the output of position control means 505 is connected to a sample and hold (S/H) circuit 509 via a D/A converter 508;

the output of the S/H circuit 509 is connected to a monitor output terminal 606; the terminal 606 is connected to a display oscilloscope (not shown), see column 7, lines 58-61;

thus, the means for displaying information reads onto the oscilloscope;

the oscilloscope displays the position signal amplitude.

Claim 4. A motor controller according to claim 1, wherein the display section of the motor controller includes a display device connected with the motor controller.

The oscilloscope (not shown) is connected to the terminal 606 as shown in Fig. 6B.

Claim 6. A motor controller according to claim 1, further including means for calculating at least one of the offsets, the amplitude and the phase difference of the analog feedback signals of two different phases.

Fig. 4 shows a phase difference counter 325 (which actually is an accumulator) for accumulating phase difference in one scan period of the encoder; thus, Ono teaches "the phase difference of the analog feedback signals of two different phases", one phase is from the encoder via O.A. 312, LPF 321 and Comparator 322, the other is a phase signal from the clock generator 311.

A special note from the examiner: Applicant's invention (and claims) is a display section 28 for displaying an analog signal output from the encoders 5, 6, see applicant's Fig. 1. Ono does the same. Ono's encoder output is an analog signal. Ono teaches displaying the position signal onto an oscilloscope, see Ono's Figs. 4, 6A, 6B and 6D.

6. Claims 2, 3, 5, 8, 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al.

The reasons for rejecting these claims are same as that explained in paragraph 4 above, discussion is omitted.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication should be directed to Bentsu Ro at telephone number 703 308-3656.

May 9, 2003

Bentsu Ro
Bentsu Ro
Primary Examiner